NVMe Plugfest #8 Webinar
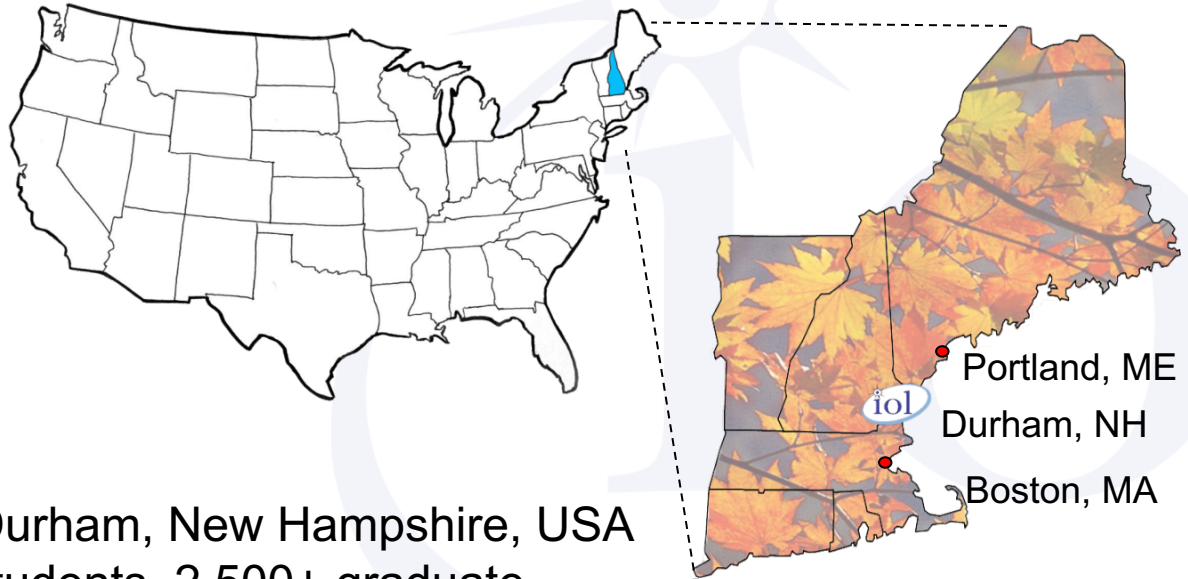## Presented by: Kerry Munson

www.iol.unh.edu

Who We Are

University of New Hampshire

- Founded in 1866
- Main campus located in Durham, New Hampshire, USA
- 12,500+ undergraduate students, 2,500+ graduate students

Portland, ME

Durham, NH

Boston, MA

InterOperability Lab

- The UNH-IOL is a non-profit neutral, third-party laboratory dedicated to testing data networking technologies through industry collaboration.

- Since 2012, NVMe Org has collaborated with UNH-IOL to manage the Integrator's List based Test Program on behalf of NVMe Organization

University of New Hampshire
InterOperability
Laboratory

NVMe Plugfest #8

When:
Monday October 30, 2017 -
Thursday November 2, 2017

Where:
21 Madbury Rd Suite 100
Durham, NH 03824 USA

Agenda

- NVMe over Fabrics
- Test updates for NVMe PCIe SSDs
- Test updates for NVMe-MI
- Test Tool Updates
- Reporting Bugs with UNH-IOL tools
- How to Prepare
- Logistics
- Q&A

Glossary

- NVMe – Non-volatile memory express. Most commonly used to refer to NVMe over PCIe SSDs.

- NVMe-MI – Management Interface for NVMe SSDs

- NVMeoF – NVMe over Fabrics (RoCE V2 and Fibre Channel)

- RoCE – RDMA over Converged Ethernet

- RDMA – Remote Direct Memory Access

Agenda

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NVMeoF

1. NVMeoF Integrator's List Requirements
2. NVMeoF Interop + Conformance Tests
3. NVMeoF Conformance Tools
4. NVMeoF Test Tool Walkthru

NVMeoF Integrator's List Requirements

NVMeoF Integrator's List will accept
- RoCE Initiators and Targets
- Ethernet Switches
- Fibre Channel Initiators and Targets, Switches

Requirements documented in [NVMe Integrators List Policy Document v8.0](#)

NVMeoF Integrator's List Requirements

Requirements for Initiators
1. Pass NVMeoF Interop Tests with 2 Target Interop Partners

Requirements for Switches
1. Pass NVMeoF Interop Tests with 2 Target Interop Partners

Requirements for Targets
1. Pass NVMeoF Interop Tests with 2 Initiator Interop Partners
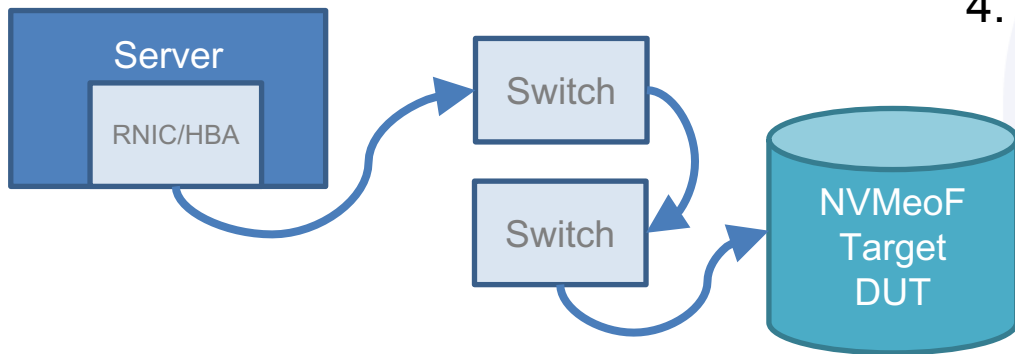2. Pass NVMe Protocol Conformance 'OF' tests

2 Partners could be same HW with different OS/Driver.

NVMeoF Interop Tests

Pass NVMeoF Interop Tests with 2 partners in a multi switch setup.
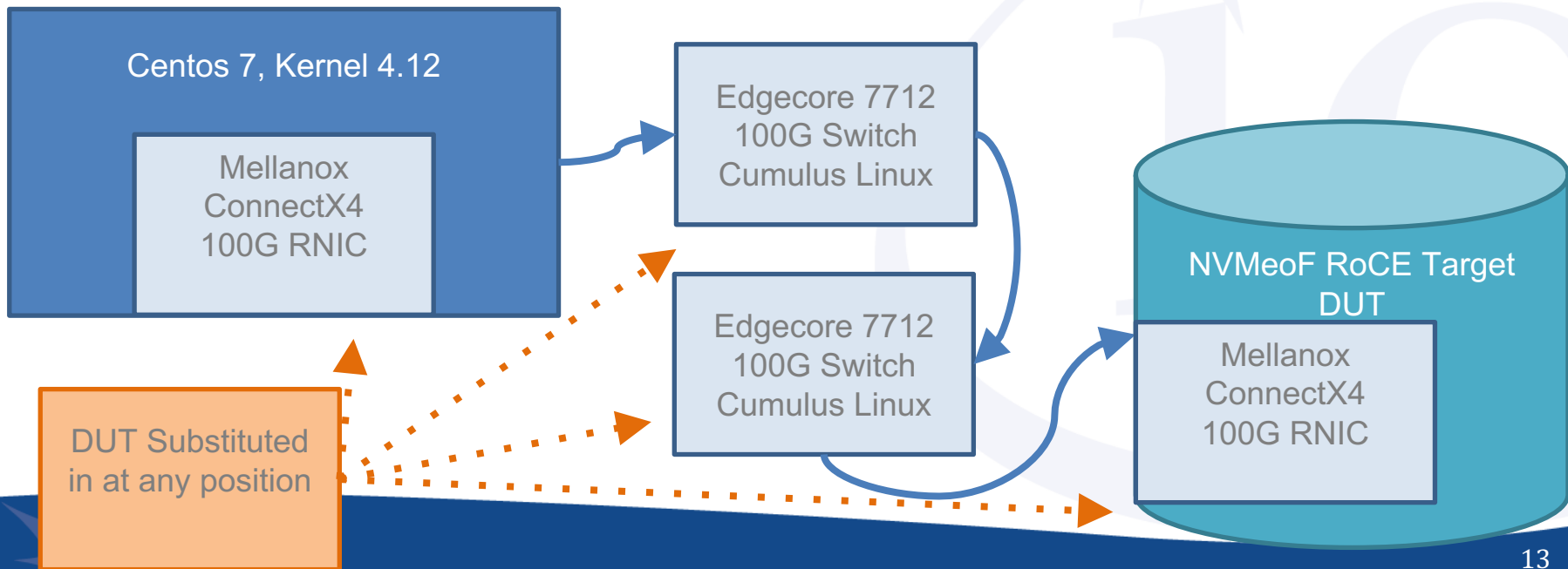
[NVMeoF Interop Test Suite Document](#)

NVMeoF Interop Tests Summary:

1. Discover Target
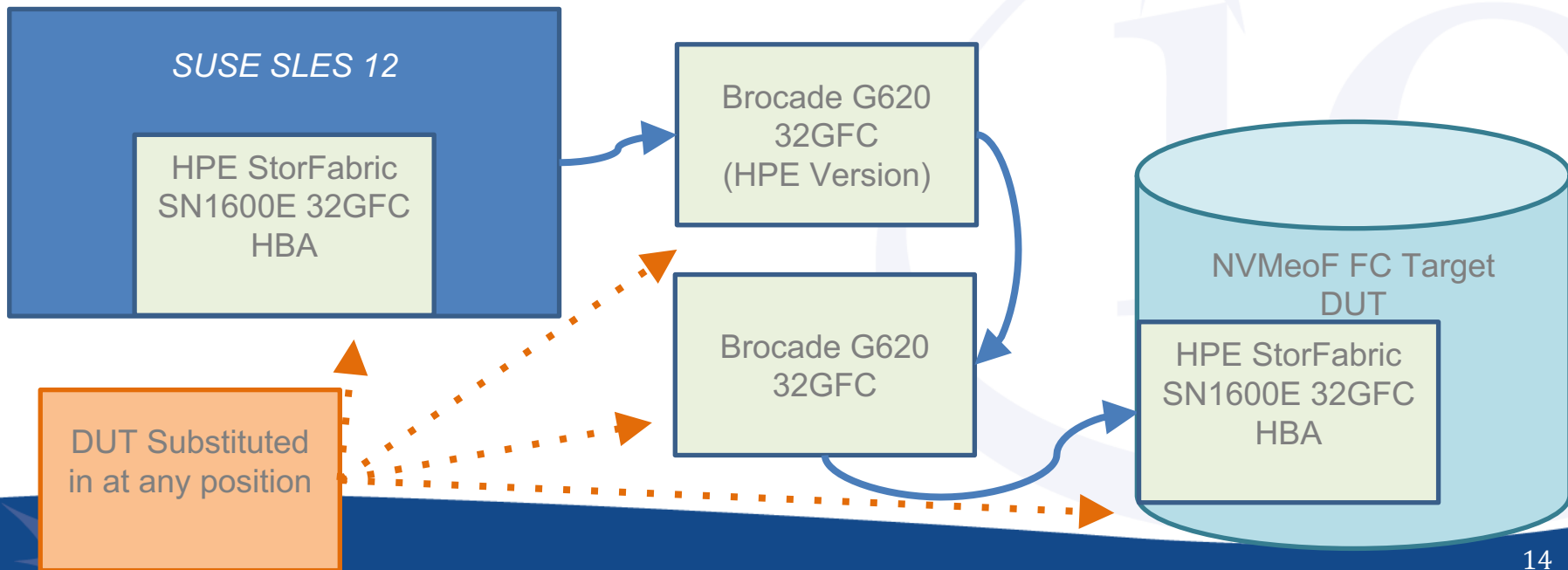2. Send Traffic
3. Link Pull
4. Power Up

NVMeoF Interop Tests

UNH-IOL NVMeoF RoCE HW/SW Setup

Centos 7, Kernel 4.12

Mellanox ConnectX4 100G RNIC

Edgecore 7712 100G Switch Cumulus Linux

Edgecore 7712 100G Switch Cumulus Linux

NVMeoF RoCE Target DUT

Mellanox ConnectX4 100G RNIC

DUT Substituted in at any position

NVMeoF Interop Tests

UNH-IOL NVMeoF Fibre Channel HW/SW Setup

SUSE SLES 12

HPE StorFabric SN1600E 32GFC HBA

Brocade G620 32GFC (HPE Version)

Brocade G620 32GFC

NVMeoF FC Target DUT

HPE StorFabric SN1600E 32GFC HBA

DUT Substituted in at any position

NVMeoF Tests: NVMe Conformance Tests

- Documented in [NVMe Conformance Test Suite v8.0](#)
- Pass NVMe Protocol Conformance tests marked 'OF' (~60% of Tests)
- Currently verifies NVMe protocol only, no verification of Binding Spec

University of New Hampshire InterOperability Laboratory – NVMe

Test 1.6 – Format NVM Command (M, OF)

Purpose: To verify that an NVMe Controller can properly execute the Format N

References:
[1] NVMe Specification 5.15

Resource Requirements:
Tools capable of monitoring and decoding traffic on the NVMe interface

Last Modification: July 7, 2016

Discussion: The Format NVM command is used to low level format the NVM wants to change the LBA data size and/or metadata size. A low level format
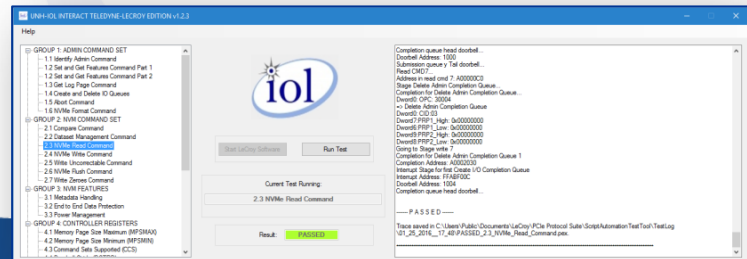
NVMeoF: Conformance Tools

UNH-IOL IOL INTERACT PC Edition for FC and RoCE

Tool acts as NVMeoF Initiator, to exercise the the NVMe protocol functionality on the Target.
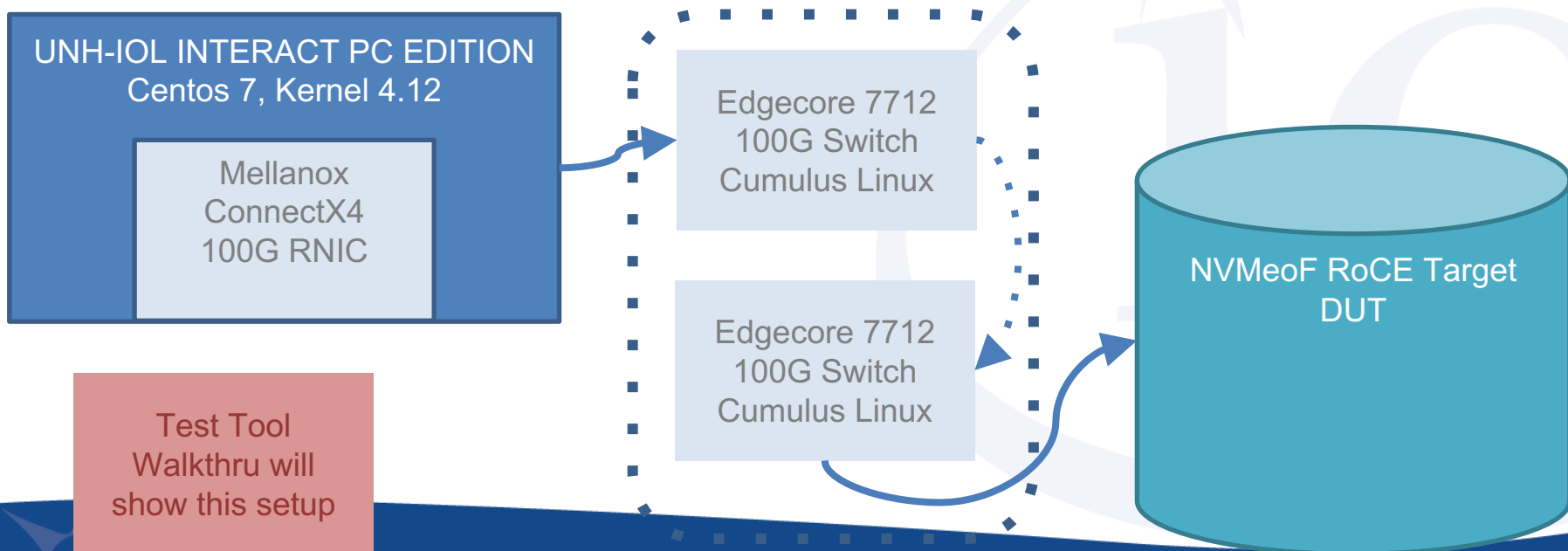
Encourage members to [download](#) and run tool ahead of event.
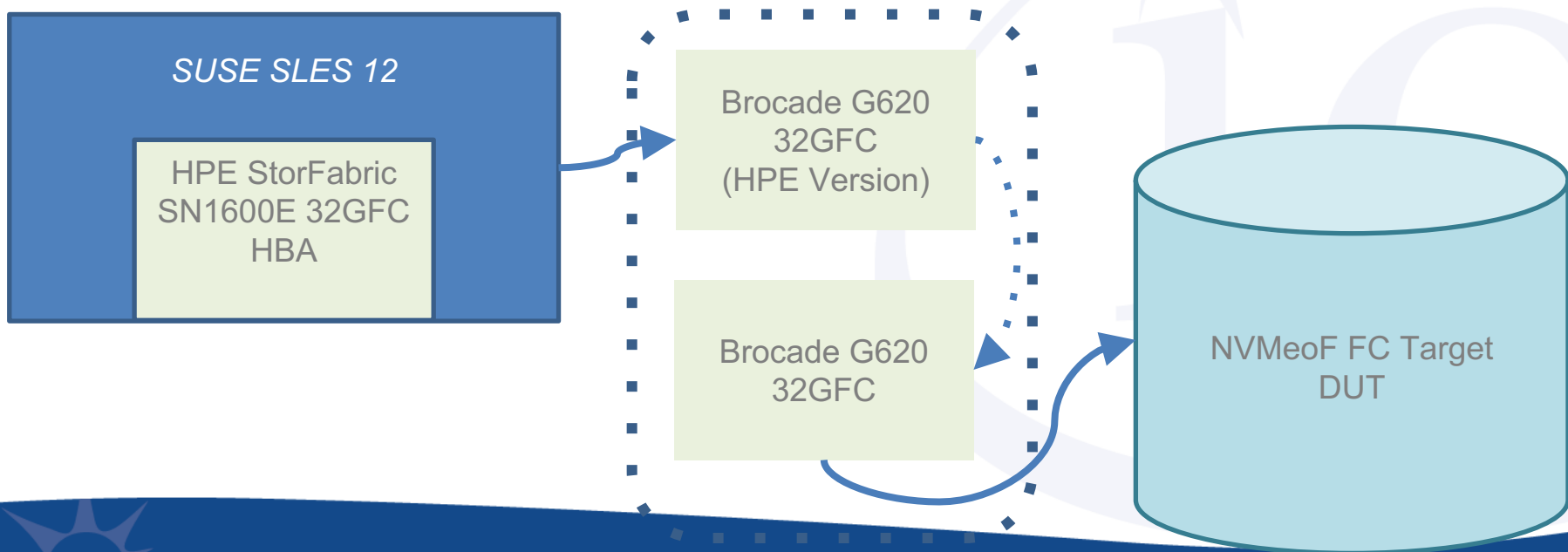
Uses nvmecli toolbox

16

NVMeoF: Conformance Tools

IOL INTERACT PC Edition RoCE HW/SW Setup

UNH-IOL INTERACT PC EDITION
Centos 7, Kernel 4.12

Mellanox
ConnectX4
100G RNIC

Edgecore 7712
100G Switch
Cumulus Linux

Edgecore 7712
100G Switch
Cumulus Linux

NVMeoF RoCE Target
DUT

Test Tool
Walkthru will
show this setup

NVMeoF: Conformance Tools

IOL INTERACT PC Edition FC HW/SW Setup

SUSE SLES 12

HPE StorFabric SN1600E 32GFC HBA

Brocade G620 32GFC (HPE Version)

Brocade G620 32GFC

NVMeoF FC Target DUT

IOL INTERACT NVMeoF Test Tool Walkthru

OS: Centos 7, Kernel 4.12
RDMA NIC: Mellanox ConnectX4-LX
Tutorial: https://community.mellanox.com/docs/DOC-2504

Initiator Side

```
[root@d124064 LDD_Scripts]# lsmod | grep "nvme"
nvme                    28672  0
nvme_rdma               28672  0
nvme_fabrics            20480  1 nvme_rdma
nvme_core               53248  3 nvme_fabrics,nvme_rdma,nvme
rdma_cm                 61440  2 nvme_rdma,rdma_ucm
ib_core                237568  11 ib_cm,rdma_cm,ib_umad,nvme_rdma,ib_uverbs,ib_ipoib,iw_cm,mlx5_ib,ib_ucm,rdma_ucm,mlx4_ib
mlx_compat              16384  18 ib_cm,rdma_cm,ib_umad,nvme_fabrics,ib_core,nvme_rdma,ib_uverbs,nvme,nvme_core,mlx4_en,ib_ipoib,mlx5_core,iw_cm,mlx5_ib,mlx4_core,ib_ucm,rdma_uc
m,mlx4_ib
```

Target Side

```
[rdmanvme@openvpn-client15 ~]$ lsmod | grep "nvme"
nvmet_rdma              32768  1
nvmet                   53248  13 nvmet_rdma
rdma_cm                 61440  2 rdma_ucm,nvmet_rdma
ib_core                237568  11 ib_cm,rdma_cm,ib_umad,ib_uverbs,ib_ipoib,iw_cm,mlx5_ib,ib_ucm,rdma_ucm,nvmet_rdma,mlx4_ib
nvme                    28672  4 nvmet,nvmet_rdma
nvme_core               53248  2 nvme
mlx_compat              16384  18 ib_cm,rdma_cm,ib_umad,ib_core,ib_uverbs,nvmet,nvme,nvme_core,mlx4_en,ib_ipoib,mlx5_core,iw_cm,mlx5_ib,mlx4_core,ib_ucm,rdma_ucm,nvmet_rdma,mlx4
_ib
```

Target Side Working Directory

```
[rdmanvme@openvpn-client15 nvmet]$ pwd
/sys/kernel/config/nvmet
```

Tree

```
[rdmanvme@openvpn-client15 nvmet]$ tree
.
├── hosts
├── ports
│   └── 1
│           ├── addr_adrfam
│           ├── addr_traddr
│           ├── addr_treq
│           ├── addr_trsvcid
│           ├── addr_trtype
│           ├── referrals
│           └── subsystems
│               └── nvmet-rdma -> ../../../../nvmet/subsystems/nvmet-rdma
└── subsystems
    └── nvmet-rdma
            ├── allowed_hosts
            ├── attr_allow_any_host
            └── namespaces
                └── 10
                        ├── device_nguid
                        ├── device_path
                        ├── enable
                        └── pci_device_path
```

Subsystem
NVMe Qualified Name

Namespace ID

Initiator Side Discovery

```
[root@d124064 ~]# nvme discover -t rdma -a 192.168.0.1 -s 4420

Discovery Log Number of Records 1, Generation counter 1
=====Discovery Log Entry 0======
trtype:   rdma
adrfam:   ipv4
subtype: nvme subsystem
treq:     not specified
portid:   1
trsvcid: 4420

subnqn:   nvmet-rdma
traddr:   192.168.0.1

rdma_prtype: not specified
rdma_qptype: connected
rdma_cms:     rdma-cm
rdma_pkey: 0x0000
```

Transport type

Address

IANA Default
Port Number for
NVMeoF

Subsystem
NVMe Qualified
Name

Initiator Side List, no targets shown, then Connect and List Targets

```
[root@d124064 LDD_Scripts]# nvme list
Node                SN                   Model                                    Namespace Usage                                Format              FW Rev
----------------    --------------------  ----------------------------------------  --------- ------------------------------------ -----------------  --------
[root@d124064 LDD_Scripts]#
[root@d124064 LDD_Scripts]#
[root@d124064 LDD_Scripts]#
[root@d124064 LDD_Scripts]# nvme connect -t rdma -n nvmet-rdma -a 192.168.0.1 -s 4420
[root@d124064 LDD_Scripts]#
[root@d124064 LDD_Scripts]# nvme list
Node                SN                   Model                                    Namespace Usage                                Format              FW Rev
----------------    --------------------  ----------------------------------------  --------- ------------------------------------ -----------------  --------
/dev/nvme0n1        2b0fc37e9b36ca08     Linux                                    10        400.09  GB /  400.09  GB            512    B +  0 B      4.12.4-1
[root@d124064 LDD_Scripts]#
[root@d124064 LDD_Scripts]#
```

[root@d124064 ~]# nvme connect -t rdma -a 192.168.0.1 -s 4420 -n nvmet-rdma
[root@d124064 ~]# nvme list
Node   SN   Model   Namespace Usage   Format

File   Edit   Tools

- ☑ #Group 1: Admin Command...
  - ☐ Test 1.1 - Identify Command - Case 1
  - ☐ Test 1.1 - Case 2
  - ☑ Test 1.1 - Case 3
  - ☐ Test 1.1 - Case 4
  - ☐ Test 1.1 - Case 5
  - ☐ Test 1.2 - Set/Get Features - Case 1
  - ☐ Test 1.2 - Case 2
  - ☐ Test 1.2 - Case 3
  - ☐ Test 1.2 - Case 4
  - ☐ Test 1.2 - Case 5
  - ☐ Test 1.3 - Get Log Page Command - Case 1
  - ☐ Test 1.3 - Case 2
  - ☐ Test 1.3 - Case 3
  - ☐ Test 1.3 - Case 5
  - ☐ Test 1.3 - Case 6
  - ☐ Test 1.3 - Case 7
  - ☐ Test 1.3 - Case 8
  - ☐ Test 1.6 - Format NVM Command - Case 1
  - ☐ Test 1.6 - Case 2
  - ☐ Test 1.6 - Case 3

Run

Cancel

README

Display Log

Display Results

◉ nvme0

Test 1.1 - Case 3
Testing started at: Sep-21-2017_09-53-03
tnvme command: sudo ./runLDD.sh --test=1.1.3
-d=/dev/nvme0 -v 1.2
Number of Tests Passed: 1
Number of Tests Failed: 0
Number of Tests Skipped: 0
Number of Informative Tests: 0
Testing finished at: Sep-21-2017_09-53-03
Test Passed

--------------End of Testing--------------
Number of Tests Passed: 1
Number of Tests Failed: 0
Number of Tests Skipped: 0
Number of Informative Tests: 0
Testing finished at: Sep-21-2017_09-53-03
Test Passed

Full Log output is contained in manage/LogFolder/
Testing performed on Sep-21-2017_09-53-03

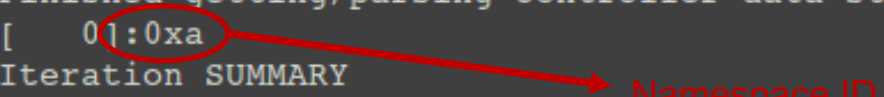100%   **Time Running:**   Revision 1.2 (Default) ▼   License Expiration: 30-sep-2018

Test Log from
UNH-IOL INTERACT
for RoCE
Version 8.0a

Test 1.1 Case 3
Identify Command:
Namespace List

```
--dump=./Logs
--postfail
-k
skiptest.cfg
--test=1.1.3
-d=/dev/nvme0
-v
1.2
Running test: 1.1.3
Running on device: /dev/nvme0
Setting device to /dev/nvme0

Finished getting/parsing controller data struct
[    0]:0xa
Iteration SUMMARY
passed : 1
failed : 0
skipped : 0
informative : 0
total tests : 1
total groups : 1
Completed at Thu Sep 21 09:53:03 EDT 2017
Elapsed runtime (hh:mm:ss): 0:0:0
~

~
"Test1.1-Case 3-1.1.3-0" 23L, 391C
```

Namespace ID

Test Log from UNH-IOL INTERACT for RoCE Version 8.0a

Test 1.3 Case 1 Get Log Page Command: Supported LIDs

```
..................
 Entry[63]
..................
error_count  : 0
sqid         : 0
cmdid        : 0
status_field : 0
parm_err_loc : 0
lba          : 0
nsid         : 0
vs           : 0
..................
Smart Log for NVME device:nvme0 namespace-id:ffffffff
critical_warning                    : 0
temperature                         : 4294967023 C
available_spare                     : 0%
available_spare_threshold           : 0%
percentage_used                     : 0%
data_units_read                     : 1,856
data_units_written                  : 780,140,963
host_read_commands                  : 128
host_write_commands                 : 114
controller_busy_time                : 0
power_cycles                        : 0
power_on_hours                      : 0
unsafe_shutdowns                    : 0
media_errors                        : 0
num_err_log_entries                 : 0
Warning Temperature Time            : 0
Critical Composite Temperature Time : 0
Temperature Sensor 1                : 0 C
Temperature Sensor 2                : 0 C
Temperature Sensor 3                : 0 C
Temperature Sensor 4                : 0 C
Temperature Sensor 5                : 0 C
Temperature Sensor 6                : 0 C
Temperature Sensor 7                : 0 C
Temperature Sensor 8                : 0 C
Firmware Log for device:nvme0
afi  : 0
```

NVMeoF: Next Steps

Future Work:
1. Add NVMe conformance for NVMeoF Initiators
2. Expanding # of Interop Partners for IL Listing
3. Add NVMeoF conformance
4. Conformance test for Binding Specs

Agenda

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- Test updates for NVMe-MI
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NVMe Conformance Test Requirements

- Test with both PC edition and LeCroy edition IOL INTERACT conformance tests

- If your product passes on both PC edition and LeCroy edition, *no further review is required*

- PC edition and LeCroy edition conformance testing each take approximately 30 minutes

- The latest v8.0 test suites, along with a redline version are available at:
  https://www.iol.unh.edu/testing/storage/nvme/test-suites

NVMe Conformance Test Suite Updates

Tests with Status Changes:

Tests 2.3 and 2.4 Case 4 (NLB>MDTS) modified to be 'Mandatory if Supported', as these tests are only applicable if MDTS is not equal to 0

Tests 2.3 and 2.4 Case 7 modified to be 'Mandatory if Supported' ,as these tests are only applicable if NN is not equal to 0xFFFFFFFF

Test 1.3 Case 4 modified to be Mandatory if Supported depending on whether MDTS=0 or not. Test modified to expect "Invalid Field in Command" if MDTS conflicts with NUMD/NUMDU/NUMDL. New Test Case 1.3 Case 10 is FYI

Modified Test 2.1 to perform compares using a known sequence rather than the Identify Log Page data to simplify test implementation.

Clarified Test 2.9 Case 1 that both NABSN and NADSPF need to be set to zero for the test to applicable.

Modified Test 5.5 to make each condition tested into a separate test case. Most test procedures were not modified and so remain Mandatory, with the exception of case 6 which had the procedure modified and is marked FYI. Clarified procedure to indicate that if no features are indicated as 'Not Changeable' then the test case does not apply.

Tests 2.5 Case 5, 2.7 Case 5, 3.4 Case 1, 7.3 Case 1, 1.4 Case 9 had status changed from FYI to Mandatory or Mandatory if Supported.

Tests 1.1 Case 4, 1.7 Case 1, 2.2 Case 3, 4, 5, 2.7 Case 9, 2.9 Case 2, 7.1 Case 2 and 7.2 had status changed from In Progress to FYI.

NVMe Interop Test Requirements

- No significant changes to Interop Tests
  - Read/Write + Boot with 5 systems
  - Hotplug if U.2 with 1 system

- Interop Read/Write VDBENCH Scripts shared on UNH-IOL Box Fileshare

- http://www.oracle.com/technetwork/server-storage/vdbench-downloads-1901681.html

- Interop testing has been automated to help save time during interop test blocks
- Interop testing will take approximately 90 minutes

- The latest v8.0 test suite available at:
  https://www.iol.unh.edu/testing/storage/nvme/test-suites

Interop Systems

Platform	OS	Testing
Dell PowerEdge R720	Win 2k12 Server R1 & R2	Read/write
Dell PowerEdge R720	RHEL 6.5	Hot plug
ASUS X79 Deluxe LGA 2011	Ubuntu 16.04	Read/write
SUPERMICRO MBD-X10SAT-O ATX Server	RHEL 6.5	Read/write
SUPERMICRO MBD-X10SAT-O ATX Server	Windows 10	Read/write
ASRock Z97	Ubuntu 16.04	Boot
Gigabyte GA-1 H170	Ubuntu 16.04	Boot
Intel 'Wildcat Pass'	Win2k16 Server	Read/write
Intel 'Wildcat Pass'	CentOS	Read/write

https://www.iol.unh.edu/testing/storage/nvme/equipment

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NVMe-MI Conformance Test Requirements

- Test performed using the Teledyne-LeCroy T-34

- Currently no NVMe-MI Interop Tests

- The latest v8.0 test suite, is available at:
  https://www.iol.unh.edu/testing/storage/nvme/test-suites

- **NVMe and NVMe-MI Integrator's Lists are Independent**

NVMe-MI Conformance Test Requirements

Known Issue with Test 8.5

- Test performs a Controller Health Status Poll command, then verifies that DUT responds with a Controller Health Status Poll Response with all reserved bits set to 0. The current test implementation incorrectly treats the RENT field as reserved.
- Test Tool will incorrectly fail devices which implement NVMe-MI v1.0 ECN 003
- This ECN changed a value from being zeros based to not zeroes based, changing the value that the test tool needs to look for.
- ICC is aware of this and ready to provide waiver for DUTs that run into this problem.
- **Please be aware of if you're device has implemented NVMe-MI v1.0 ECN 003.**

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UNH-IOL NVMe INTERACT Test Tools

- PC Edition for PCIe released Sept 8, 2017

- Teledyne-LeCroy Edition for PCIe released August 28, 2017

- Version 8.0a or higher will be used at Plugfest #8

- Download today from UNH-IOL Box Fileshare and start testing

- Intended for PCIe-based SSD testing
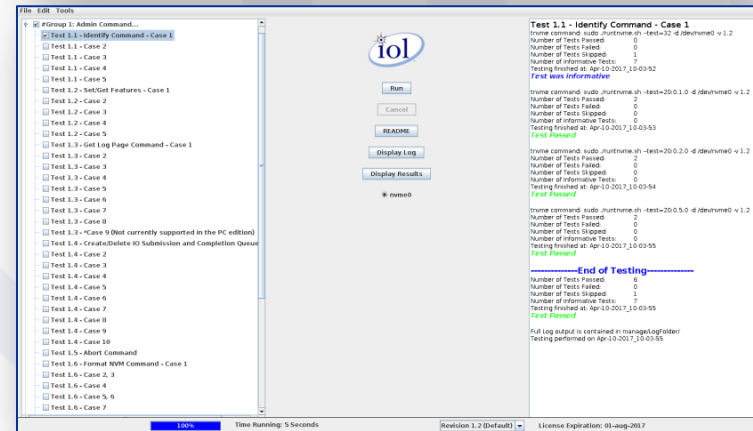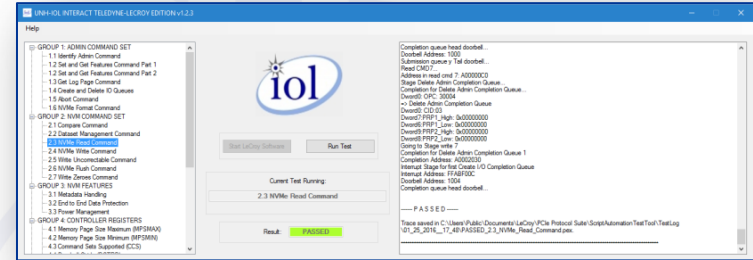
NVMe Test Tool Updates

- PC Edition IOL-INTERACT v8.0

  - Releases in two parts and can be found on Box
  - The some tests re-architected to supports creating better/clearer tests logs
  - Both packages must be run to perform all the required tests so we highly recommend both packages being run.
  - We're working on integrating the packages together soon, which will be more convenient for you
  - This will not change any of the 'NVMe functionality' in those tests

NVMe: Conformance Tools

IOL INTERACT PC Edition PCIe HW/SW Setup

UNH-IOL INTERACT PC EDITION
Ubuntu 16.04 LTS, Kernel XX.YY

PCIe

NVMe PCIe SSD
DUT
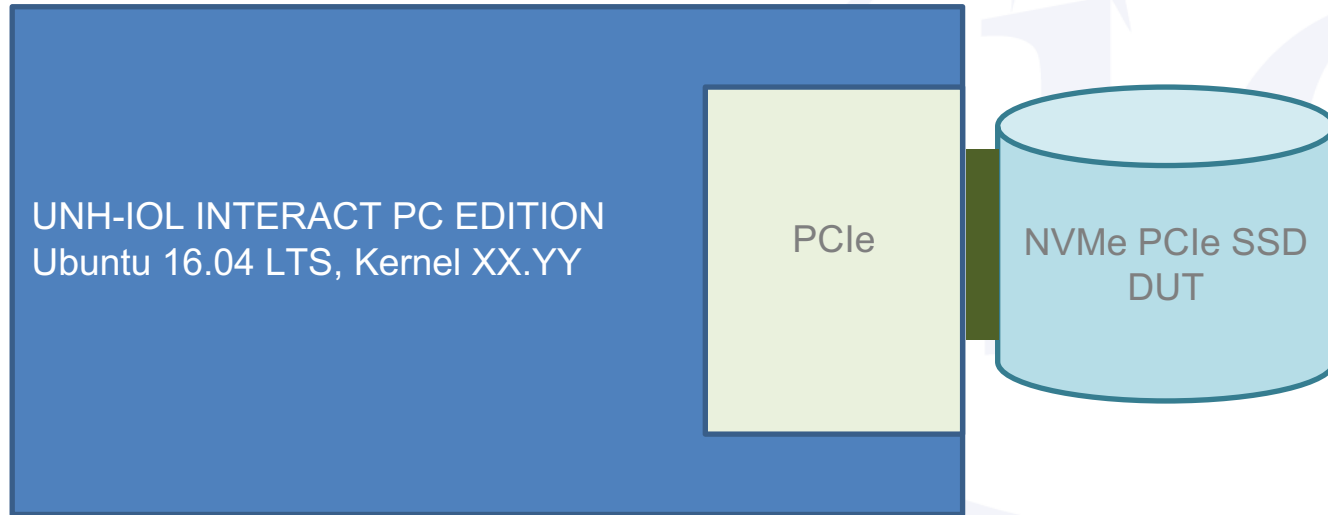
NVMe Test Tool Updates

- LeCroy Edition IOL-INTERACT V8.0

  - GUI change - the ability to run multiple tests at one time enabled, and able to select all the tests by clicking on the IOL Logo in the wrapper. Also, alterations to how logs are stored.

  - 5 new test cases supported (previously only available on PC edition):
    - 1.3 case 4 (NUMD/MDTS Conflict (MS, OF))
    - 1.3 case 5 (Get Error Information after Error (M, OF))
    - 1.4 case 6 (Create I/O Submission Queue Physically Contiguous (M))
    - 1.4 case 9 (Create I/O Completion Queue Invalid Queue Address Offset (M))
    - 1.4 case 10 (Create I/O Submission Queue Invalid Queue Address Offset (FYI))

NVMe: Conformance Tools

IOL INTERACT Teledyne-LeCroy Edition HW/SW Setup
and
NVMe-MI Conformance Setup

Windows 10 PC **Teledyne-LeCroy PETracer v8.60**	USB 3.0 ↔	Teledyne-LeCroy T-34 PCIe Analyzer Exerciser	NVMe PCIe SSD DUT
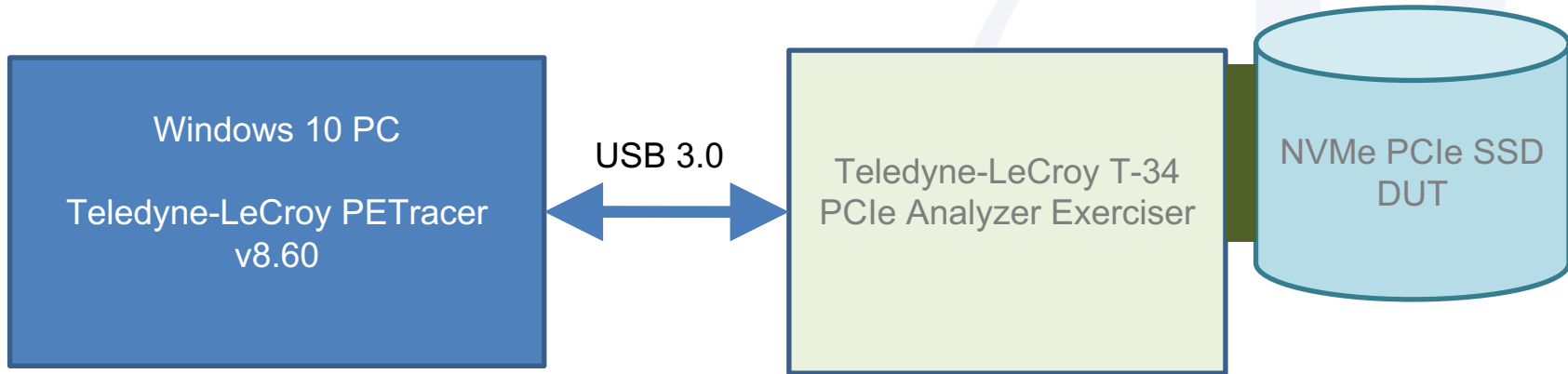
Conformance Test Tools

NVMe	NVMe over Fabrics	NVMe-MI	NVMe	NVMe
Used for Groups 1, 2, 3, 4, 5, 6, 7, 8, 9, 10	Used for separate NVMe over Fabrics test suite	Used for separate Conformance v8.0 NVMe-MI test suite	Used for Groups 1, 2, 3, 4, 5, 6, 10	Used for Group 7 and 9
Distributed via UNH-IOL Box Fileshare https://unh.app.box.com/files/0/f/7374078377/INTERACT	Distributed via UNH-IOL Box Fileshare https://unh.app.box.com/files/0/f/7374078377/INTERACT	Contact Teledyne-LeCroy for scripts	Distributed via UNH-IOL Box Fileshare https://unh.app.box.com/files/0/f/7374078377/INTERACT	Contact Oakgate for scripts: sales@oakgatetech.com
Supports up to Ubuntu 16.04 LTS now.	Centos 7 with upstream Kernel 4.12	Requires PETracer v8.60 or higher	Requires PETracer v8.60 or higher	Requires SVF version 3.7.1.

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Be Prepared!

Download the latest tools and run them!

- Tools that we will use at the plugfest are available now
- Run them, find bugs, fix bugs
- Link to licensing agreement
  - https://www.iol.unh.edu/solutions/test-tools/interact
- Link to UNH Box PC Edition IOL-INTERACT Software
  - https://unh.box.com/s/cktgos25cjfk6alclromuvqfn1lgebgd
- Link to UNH Box LeCroy Edition IOL-INTERACT Software
  - https://unh.box.com/s/n3drj5qpmm7maqjrahxw3ycovuy3p37g

Be Prepared!

Bring 2+ Samples of each product

- Conformance tests will only require 1 sample

- Interop tests require that **2 samples** be used simultaneously

- Please bring **at least 2 samples** of your product, this will facilitate interop testing

- Bring any necessary PCs, tools, cables that will be necessary to re-program or re-flash your device

Be Prepared!

● If you have a larger product (i.e. large PCIe dev board), please bring your own PCIe flex or riser cables

Be Prepared!

- UNH-IOL will have U.2/SFF-8639 to CEM adapters on hand
- If you have a **non CEM** form factor, please bring it, and also please bring at least 2 of your own adapters - this will facilitate interop testing
- Adapters available from *serialcables.com* and *teledynelecroy.com*
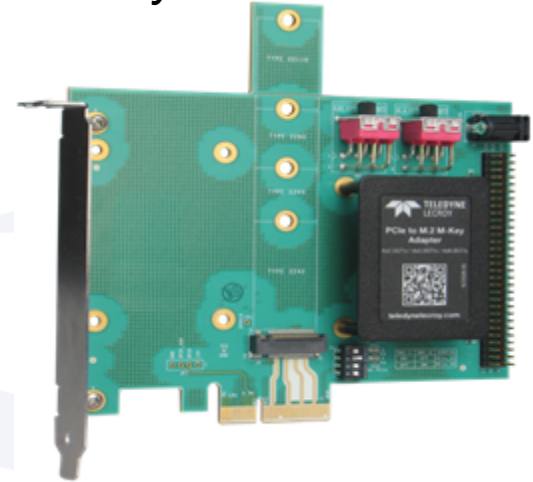
Agenda

- NVMe over Fabrics ✓
- Test updates for NVMe PCIe SSDs ✓
- Test updates for NVMe-MI ✓
- Test Tool Updates ✓
- Reporting Bugs with UNH-IOL tools ✓
- How to Prepare ✓
- **Logistics**
- Q&A

Available!

- We have a soldering station in the Plugfest Room.

- Wired and wireless internet provided

- Power cords, mice, keyboards, monitors
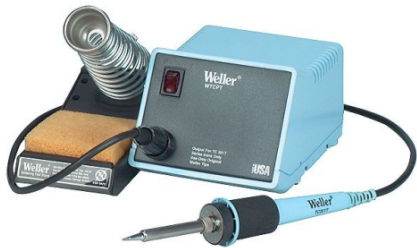
No Photos

- **No photos!**

- Please respect confidentiality of your colleagues.
- All companies have agreed to UNH-IOL Usage Agreement
- UNH-IOL may take some 'generic' photos.
- If you would like a photo of your team, or your own equipment setup, please check with UNH-IOL staff first.

Travel

Visa Invitation Letter Contact:
kerry.munson@iol.unh.edu

Shipping Address:
    NVMe Plugfest % Kerry Munson
    21 Madbury Rd Suite 100
    Durham, NH 03824
    📞: 603-862-0090

Equipment must arrive by October 28th
Hotels, Travel, Parking Info:
https://www.iol.unh.edu/about/visit

Airports: ✈
MHT - Manchester Boston Regional Airport (🕐1 hr)

BOS - Boston Logan International Airport (🕐1hr 30mins)

Train: 🚄
Amtrak - Downeaster
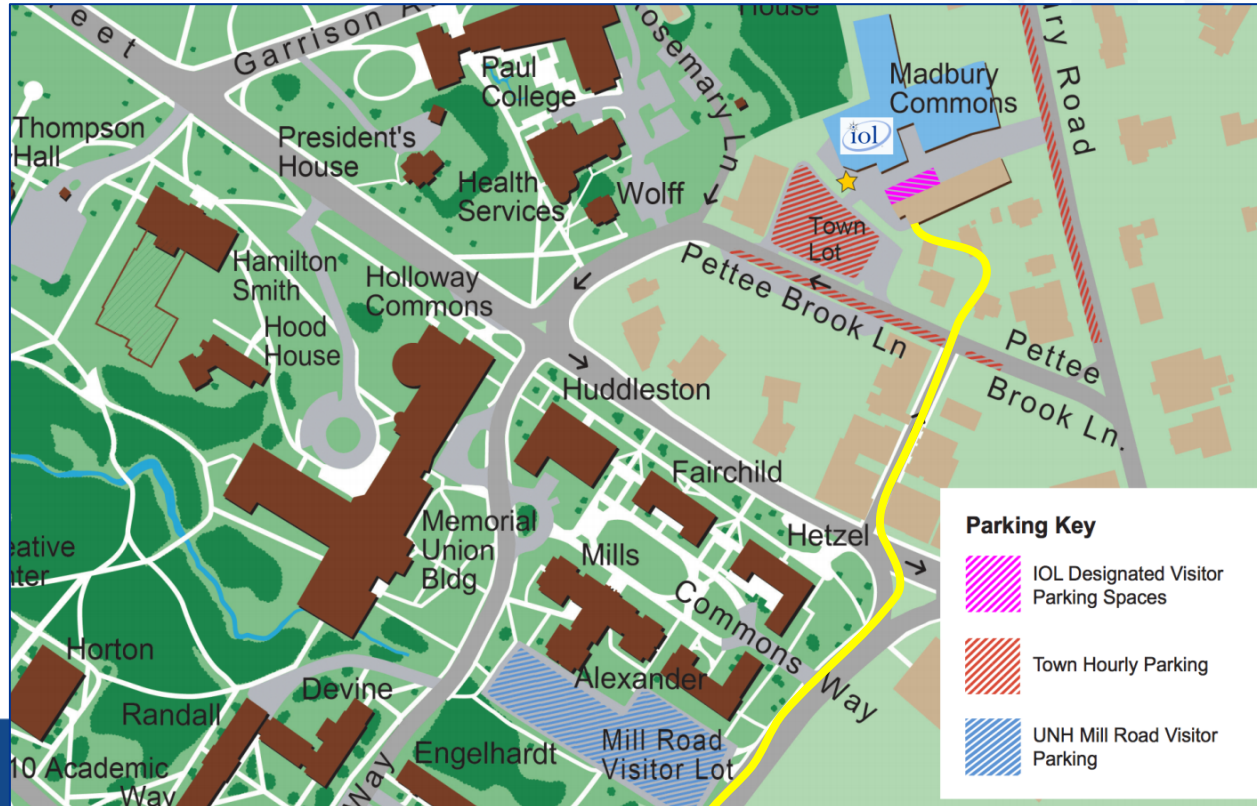Boston North Station > Durham-UNH
http://www.amtrakdowneaster.com/

Parking

Parking code will be provided to registrants
UNH Campus Map:
https://www.iol.unh.edu/sites/default/files/images/directions/iol-campus-map.pdf

Logistics

- Plugfest runs Monday - Thursday
- Doors open at 8AM, testing until 6PM
- Kickoff meeting Monday @ 11AM
- Light breakfast and lunch provided each day
- Device schedule will be made after registration closes

Registration

Register here:
https://www.iol.unh.edu/testing/storage/nvme/grouptest

Registration will close October 3, 2017

Registration Limits:
- At registration 2 products may be registered.
- All other products will be waitlisted, and accepted on a space-available basis.
- At registration you can register 4 engineers.
- Additional engineers will incur an additional fee.

Email: Kerry.Munson@iol.unh.edu
Web: www.iol.unh.edu

Q&A

Q&A

Question: Have there been any NVMe-oF (RoCE or RoCEv2 or iWARP side) meetings yet? We have already had some Fibre Channel (FC) NVMe meetings

Answer: The meetings covering this are with the NVMe Interop and Compliance Committee (ICC), these are every other Tuesday at 2PM Eastern Time. Next call is 9/26. You can get on the ICC email distribution via your account on nvmexpress.org"

Q&A

Question: Will we be testing RoCE and RoCEv2 and iWARP

Answer: We are focused on RoCEv2 for this first NVMeoF plugfest

Q&A

Question: Does the RoCE/RoCEv2/iWARP target adapter need to have an actual NVMe device behind it or can it us just virtual RAM driver in the host?

Answer: We (UNH-IOL) haven't tested out the virtual RAM functionality, although there's no reason it shouldn't work. We've only tested NVMeoF with an NVMe SSD behind the target adapter. I would recommend bringing an NVMe SSD that you're familiar with if you're intending to test an NVMeoF Target.

Q&A

Question: For both FC and RDMA, how long does it take to run the test suite?

Answer: The conformance tests can be run usually in about 30 minutes, but we're planning to allot 60 minutes to conformance testing.
Interop testing usually takes about 90 minutes"

Q&A

Question: How come the FCIA is running their own meetings yet the RoCE (Ethernet) side is part of the NVMe meetings?

Answer: It's not entirely accurate to say tha the RoCE side is part of the Ethernet meetings and FC is not. The NVMeoF Interop tests are designed to be 'transport agnostic', in that they should be implemented and performed similarly for both FC and RoCE.
FCIA is having meetings for plugfest testing that will likely be a deeper dive into FC testing (beyond just NVMeoF). Similarly IBTA (Infiniband Trade Association) will be having events focused on RoCE conformance and inteorp, again beyond just NVMe. Certainly we'd like input from both FC and RoCE product experts on the NVMe calls. The primary goal for the NVMe side is to test out NVMe protocol over the Fabric transport for inclusion in the NVMeoF Integrators List, without diving into testing the respective Fabric transport.

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Q&A

Question: PC edition 8.0 test case has been split to two packages, original and LDD folder. At plugfest will tests still be splitted into two packages and test them one by one?

Answer: For v8.0 we've implemented the tests using 2 different NVMe drivers to enable further test functionality. We're working on integrating these into a single package. We recommend that you download and run both, as each one runs unique tests.